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Sequence Listing was accepted.

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217-9197 (toll free).

Reviewer: Durreshwar Anjum

Timestamp: Wed Oct 17 11:30:42 EDT 2007

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Sequence Listing was accepted.

If you need help call the Patent Electronic Business Center at (866)
217-9197 (toll free).

Reviewer: Durreshwar Anjum

Timestamp: Fri Oct 12 13:51:26 EDT 2007

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Application No: 10561235 Version No: 2.0

Input Set:

Output Set:

Started: 2007-10-01 17:39:32.594

Finished: 2007-10-01 17:39:32.948

Elapsed: 0 hr(s) 0 min(s) 0 sec(s) 354 ms

Total Warnings: 0

Total Errors: 0

No. of SeqIDs Defined: 7

Actual SeqID Count: 7

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<120> Immunogenic Compositions Comprising Multiple Gonococcal Antigens

<130> P034643WO

<140> 10561235

<141> 2007-10-01

<150> PCT/IB2004/002421

<151> 2004-06-25

<150> 0315021.6

<151> 2003-06-26

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Met Thr Phe Phe Lys Pro Ser Thr Val Val Leu Thr Ala Ser Ala Leu

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Ala Leu Ser Gly Cys Val Ala Asp Pro Val Thr Gly Gln Gln Ser Pro

20 25 30

Asn Lys Ser Ala Met Tyr Gly Leu Gly Gly Ala Ala Val Cys Gly Ile

35 40 45

Val Gly Ala Leu Thr His Ser Gly Lys Gly Ala Arg Asn Ser Ala Leu

50 55 60

Ala Cys Gly Ala Ile Gly Ala Gly Val Gly Gly Tyr Met Asp Tyr Gln

65 70 75 80

Glu Gln Arg Leu Arg Gln Asn Leu Ala Gly Thr Gln Ile Glu Ile Gln

85 90 95

Arg Gln Gly Asn Gln Ile Arg Leu Val Met Pro Glu Ser Val Thr Phe

100 105 110

Ala Thr Gly Ser Ala Ala Leu Gly Gly Ser Ala Gln Tyr Ala Leu Asn
115 120 125

Thr Ala Ala Gln Thr Leu Val Gln Tyr Pro Asp Thr Thr Leu Thr Ile
130 135 140

Asn Gly His Thr Asp Asn Thr Gly Ser Asp Ala Val Asn Asn Pro Leu
145 150 155 160

Ser Gln His Arg Ala Gln Ala Val Ala Tyr Tyr Leu Gln Thr Arg Gly
165 170 175

Val Ala Ala Ser Arg Leu Thr Val Tyr Gly Tyr Gly Ser His Met Pro
180 185 190

Val Ala Ser Asn Ala Thr Val Glu Gly Arg Ala Gln Asn Arg Arg Val
195 200 205

Glu Ile Leu Ile Asn Pro Asp Gln Arg Ala Val Asn Ala Ala Arg His
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Met
225

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<213> Neisseria gonorrhoeae

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1 5 10 15

Ser Phe Thr Met Ile Arg Leu Thr Arg Ala Phe Ala Ala Ala Leu Ile
20 25 30

Gly Leu Cys Cys Thr Thr Gly Ala His Ala Asp Thr Phe Gln Lys Ile
35 40 45

Gly Phe Ile Asn Thr Glu Arg Ile Tyr Leu Glu Ser Lys Gln Ala Arg
50 55 60

Asn Ile Gln Lys Thr Leu Asp Gly Glu Phe Ser Ala Arg Gln Asp Glu
65 70 75 80

Leu Gln Lys Leu Gln Arg Glu Gly Leu Asp Leu Glu Arg Gln Leu Ala
85 90 95

Gly Gly Lys Leu Lys Asp Ala Lys Lys Ala Gln Ala Glu Glu Lys Trp
100 105 110

Arg Gly Leu Val Glu Ala Phe Arg Lys Lys Gln Ala Gln Phe Glu Glu
115 120 125

Asp Tyr Asn Leu Arg Arg Asn Glu Glu Phe Ala Ser Leu Gln Gln Asn
130 135 140

Ala Asn Arg Val Ile Val Lys Ile Ala Lys Gln Glu Gly Tyr Asp Val
 145 150 155 160

Ile Leu Gln Asp Val Ile Tyr Val Asn Thr Gln Tyr Asp Val Thr Asp
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Ser Val Ile Lys Glu Met Asn Ala Arg
 180 185

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Ala Leu Ser Ala Cys Gly Lys Lys Glu Ala Ala Pro Ala Ser Ala Ser
 20 25 30

Glu Pro Ala Ala Ala Ser Ala Ala Gln Gly Asp Thr Ser Ser Ile Gly
 35 40 45

Ser Thr Met Gln Gln Ala Ser Tyr Ala Met Gly Val Asp Ile Gly Arg
 50 55 60

Ser Leu Lys Gln Met Lys Glu Gln Gly Ala Glu Ile Asp Leu Lys Val
 65 70 75 80

Phe Thr Asp Ala Met Gln Ala Val Tyr Asp Gly Lys Glu Ile Lys Met
 85 90 95

Thr Glu Glu Gln Ala Gln Glu Val Met Met Lys Phe Leu Gln Glu Gln
 100 105 110

Gln Ala Lys Ala Val Glu Lys His Lys Ala Asp Ala Lys Ala Asn Lys
 115 120 125

Glu Lys Gly Glu Ala Phe Leu Lys Glu Asn Ala Ala Lys Asp Gly Val
 130 135 140

Lys Thr Thr Ala Ser Gly Leu Gln Tyr Lys Ile Thr Lys Gln Gly Glu
 145 150 155 160

Gly Lys Gln Pro Thr Lys Asp Asp Ile Val Thr Val Glu Tyr Glu Gly
 165 170 175

Arg Leu Ile Asp Gly Thr Val Phe Asp Ser Ser Lys Ala Asn Gly Gly
 180 185 190

Pro Ala Thr Phe Pro Leu Ser Gln Val Ile Pro Gly Trp Thr Glu Gly
 195 200 205

Val Arg Leu Leu Lys Glu Gly Gly Glu Ala Thr Phe Tyr Ile Pro Ser
 210 215 220

Asn Leu Ala Tyr Arg Glu Gln Gly Ala Gly Glu Lys Ile Gly Pro Asn
 225 230 235 240

Ala Thr Leu Val Phe Asp Val Lys Leu Val Lys Ile Gly Ala Pro Glu
 245 250 255

Asn Ala Pro Ala Lys Gln Pro Asp Gln Val Asp Ile Lys Lys Val Asn
 260 265 270

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 <212> PRT
 <213> *Neisseria gonorrhoeae*

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 1 5 10 15

Thr Asp Glu Thr Gly Asn Pro Lys Val Pro Ser Tyr Gly Phe Ser Glu
 20 25 30

Glu Lys Ile Gly Trp Ile Leu Val Leu Asp Lys Glu Gly Arg Leu Lys
 35 40 45

Thr Val Val Pro Asn Leu Thr Ala Asp Lys Lys Pro Gln Pro Lys Leu
 50 55 60

Met Ser Val Pro Arg Pro Glu Lys Arg Thr Ser Gly Ile Lys Pro Asn
 65 70 75 80

Phe Leu Trp Asp Lys Thr Ala Tyr Ala Leu Gly Val Glu Ala Asn Lys
 85 90 95

Asn Lys Ala Glu Ala Lys Glu Lys Pro Phe Thr Pro Ser Glu Lys Thr
 100 105 110

Phe Glu Ala Phe Lys Gln Tyr His Leu Asp Leu Leu Gln Asn Ser Glu
 115 120 125

Asp Glu Gly Leu Gln Ala Leu Cys Arg Phe Leu Gln Asn Trp Gln Pro
 130 135 140

Ala His Phe Ala Ala Glu Asn Leu Pro Ala Glu Met Leu Asp Ser Asn
 145 150 155 160

Thr Ala Phe Ser Leu Glu Lys Pro Thr Ala Leu Ile His Lys Arg Glu
 165 170 175

Ala Ala Gln Thr Leu Trp Ala Gly Cys Leu Lys Ser Asp Glu Ala Leu
 180 185 190

Glu Ser Leu Cys Leu Ile Ser Gly Asp Thr Ala Pro Ile Ala Arg Leu
 195 200 205

His Pro Ala Ile Lys Gly Val Phe Gly Gly Gln Ser Ser Gly Gly Ser

210	215	220	
Ile Ile Ser Phe Asn Lys Glu Ala Phe Ser Ser Phe Gly Lys Glu Gln			
225	230	235	240
Gly Ala Asn Ala Pro Val Ser Glu Gln Ser Ala Phe Ala Tyr Thr Thr			
	245	250	255
Ala Leu Asn Tyr Leu Leu Arg Arg Glu Asn Asn His Cys Leu Thr Ile			
	260	265	270
Gly Asp Ala Ser Thr Val Phe Trp Ala Glu Ala Asp Asp Ile Val Asp			
	275	280	285

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 <213> Neisseria gonorrhoeae

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Leu Ile Val Arg Ser His Tyr Arg Trp Thr Tyr Phe Phe Ala Ser Ala	
20	30
Leu Phe Val Phe Leu Ala Gly Gly Met Leu Met Leu Thr Ala Gln Trp	
35	45
Gln Arg Ala Leu Asn Phe Ala Ser Val Trp Phe Val Val Leu Ile Leu	
50	60
Phe His Arg Leu Lys Ile His Tyr Tyr Lys Gln Pro Leu Leu Ile Ser	
65	80
Asp Phe Leu Leu Ile Ala Asp Trp Arg Asn Trp Glu Thr Leu Phe His	
85	95
Tyr Lys Glu Ala Val Ile Gly Met Ala Gly Leu Leu Ala Leu Ala Gly	
100	110
Tyr Ala Val Phe Gly Trp Ser Gly Ala Asp Ser Leu Gly Met Pro Trp	
115	125
Arg Trp Ala Gly Ala Val Leu Phe Ala Ala Ala Phe Val Ser Val Arg	
130	140
His Phe Ser Lys His Pro Gly Ala Val Lys Thr Trp Leu Asp Ser Leu	
145	160
Pro Asp Asp Gly Arg Asp Val Phe Leu Asn Leu Pro Met Ser Cys Arg	
165	175
Ala Val Phe Phe Gln Val Pro Val Phe Glu Gly Asp Gly Glu Ala Phe	
180	190

Ala Arg Gln Met Pro Ser Glu Thr Arg Pro Tyr Gly Met Ser Asp Glu		
195	200	205
Lys Pro Asp Ile Val Val Thr Leu Met Glu Ser Thr Leu Asp Pro His		
210	215	220
Cys Phe Asp Phe Ala Ala Ala Lys Ile Pro Asp Leu Lys Met Phe Gly		
225	230	235 240
Arg Gln Glu Asp Thr Val Phe Ser Ser Pro Leu Arg Val His Thr Phe		
	245	250 255
Gly Gly Ala Thr Trp Lys Ser Glu Phe Ala Phe Leu Ala Gly Val Pro		
	260	265 270
Ser Thr Asp Phe Gly Ala Leu Ala Ser Gly Val Phe Tyr Ser Val Val		
	275	280 285
Pro His Leu Gln Thr Gly Phe Val Arg Asn Leu Arg Glu His Gly Tyr		
	290	295 300
Phe Cys Val Ala Leu Ser Pro Phe Thr Lys Gly Asn Tyr Asn Ala Lys		
305	310	315 320
Ala Ala Tyr Asp His Phe Gly Phe Asn Leu Met Phe Gln Pro Gln Asp		
	325	330 335
Leu Gly Tyr Pro Ala Pro Met Gly Lys Asn Leu Trp His Ile Ser Ser		
	340	345 350
Glu Glu Met Met Gln Tyr Ala Arg Met Ile Leu Glu Lys Arg His Pro		
	355	360 365
Asp Leu Glu Asn Val Arg Gln Pro Met Phe Val Tyr Val Leu Thr Met		
	370	375 380
Lys Glu His Gly Pro Tyr Arg Thr Asp Thr Asp Asn Val Phe Asp Leu		
385	390	395 400
Asp Ala Pro Asp Leu Asn Ala Lys Thr Val Ser Ala Leu Asn Asp Tyr		
	405	410 415
Ile Gly Arg Ile Ala Asp Leu Asp Lys Ala Val Glu Ser Phe Asp Arg		
	420	425 430
Tyr Leu His Glu Arg Gly Lys Pro Phe Val Phe Gly Tyr Phe Gly Asp		
	435	440 445
His Gln Val Pro Phe Glu Gly Val Ser Val Arg Lys Lys Trp Asp Tyr		
	450	455 460
Ala Gln Pro Asp Tyr Val Thr Gln Phe Ala Val Arg Ser Asn Ile Ala		
465	470	475 480
Gly Gly Phe Val Gln Arg Gln Asp Phe Leu Asp Leu Ala Phe Ala Gly		
	485	490 495

Gly Val Leu Met Glu Ala Ala Gly Leu Glu Ala Lys Asp Gly Phe Met
500 505 510

Arg Ala Asn Met Ala Met Arg Gly Leu Cys Gly Gly Gly Leu Glu Asp
515 520 525

Cys Pro Asn Arg Glu Leu Val Gly Asn Tyr Arg Asn Tyr Leu Tyr Asp
530 535 540

Val Leu Lys Ile Ala Arg
545 550

<210> 7
<211> 1468
<212> PRT
<213> Neisseria gonorrhoeae

<400> 7
Met Lys Thr Thr Asp Lys Arg Thr Thr Glu Thr His Arg Lys Ala Pro
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Lys Thr Gly Arg Ile Arg Phe Ser Pro Ala Tyr Leu Ala Ile Cys Leu
20 25 30

Ser Phe Gly Ile Leu Pro Gln Ala Arg Ala Gly His Thr Tyr Phe Gly
35 40 45

Ile Asn Tyr Gln Tyr Tyr Arg Asp Phe Ala Glu Asn Lys Gly Lys Phe
50 55 60

Ala Val Gly Ala Lys Asp Ile Glu Val Tyr Asn Lys Lys Gly Glu Leu
65 70 75 80

Val Gly Lys Ser Met Thr Lys Ala Pro Met Ile Asp Phe Ser Val Val
85 90 95

Ser Arg Asn Gly Val Ala Ala Leu Ala Gly Asp Gln Tyr Ile Val Ser
100 105 110

Val Ala His Asn Gly Gly Tyr Asn Asn Val Asp Phe Gly Ala Glu Gly
115 120 125

Ser Asn Pro Asp Gln His Arg Phe Ser Tyr Gln Ile Val Lys Arg Asn
130 135 140

Asn Tyr Lys Ala Gly Thr Asn Gly His Pro Tyr Gly Gly Asp Tyr His
145 150 155 160

Met Pro Arg Leu His Lys Phe Val Thr Asp Ala Glu Pro Val Glu Met
165 170 175

Thr Ser Tyr Met Asp Gly Trp Lys Tyr Ala Asp Leu Asn Lys Tyr Pro
180 185 190

Asp Arg Val Arg Ile Gly Ala Gly Arg Gln Tyr Trp Arg Ser Asp Glu
195 200 205

Asp	Glu	Pro	Asn	Asn	Arg	Glu	Ser	Ser	Tyr	His	Ile	Ala	Ser	Ala	Tyr	210	215	220	
Ser	Trp	Leu	Val	Gly	Gly	Asn	Thr	Phe	Ala	Gln	Asn	Gly	Ser	Gly	Gly	225	230	235	240
Gly	Thr	Val	Asn	Leu	Gly	Ser	Glu	Lys	Ile	Lys	His	Ser	Pro	Tyr	Gly	245	250	255	
Phe	Leu	Pro	Thr	Gly	Gly	Ser	Phe	Gly	Asp	Ser	Gly	Ser	Pro	Met	Phe	260	265	270	
Ile	Tyr	Asp	Ala	Gln	Lys	Gln	Lys	Trp	Leu	Ile	Asn	Gly	Val	Leu	Gln	275	280	285	
Thr	Gly	Asn	Pro	Tyr	Ile	Gly	Lys	Ser	Asn	Gly	Phe	Gln	Leu	Val	Arg	290	295	300	
Lys	Asp	Trp	Phe	Tyr	Asp	Glu	Ile	Phe	Ala	Gly	Asp	Thr	His	Ser	Val	305	310	315	320
Phe	Tyr	Glu	Pro	His	Gln	Asn	Gly	Lys	Tyr	Phe	Phe	Asn	Asp	Asn	Asn	325	330	335	
Asn	Gly	Ala	Gly	Lys	Ile	Asp	Ala	Lys	His	Lys	His	Tyr	Ser	Leu	Pro	340	345	350	
Tyr	Arg	Leu	Lys	Thr	Arg	Thr	Val	Gln	Leu	Phe	Asn	Val	Ser	Leu	Ser	355	360	365	
Glu	Thr	Ala	Arg	Glu	Pro	Val	Tyr	His	Ala	Ala	Gly	Gly	Val	Asn	Ser	370	375	380	
Tyr	Arg	Pro	Arg	Leu	Asn	Asn	Gly	Glu	Asn	Ile	Ser	Phe	Ile	Asp	Lys	385	390	395	400
Gly	Lys	Gly	Glu	Leu	Ile	Leu	Thr	Ser	Asn	Ile	Asn	Gln	Gly	Ala	Gly	405	410	415	
Gly	Leu	Tyr	Phe	Glu	Gly	Asn	Phe	Thr	Val	Ser	Pro	Lys	Asn	Asn	Glu	420	425	430	
Thr	Trp	Gln	Gly	Ala	Gly	Val	His	Ile	Ser	Asp	Gly	Ser	Thr	Val	Thr	435	440	445	
Trp	Lys	Val	Asn	Gly	Val	Ala	Asn	Asp	Arg	Leu	Ser	Lys	Ile	Gly	Lys	450	455	460	
Gly	Thr	Leu	Leu	Val	Gln	Ala	Lys	Gly	Glu	Asn	Gln	Gly	Ser	Val	Ser	465	470	475	480
Val	Gly	Asp	Gly	Lys	Va														

SEQUENCE LISTING

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<120> Immunogenic Compositions Comprising Multiple Gonococcal Antigens

<130> P034643WO

<140> 10561235

<141> 2007-10-01

<150> PCT/IB2004/002421

<151> 2004-06-25

<150> 0315021.6

<151> 2003-06-26

<160> 7

<170> SeqWin99, version 1.02

<210> 1

<211> 6

<212> PRT

<213> Neisseria gonorrhoeae

<400> 1

Gly Ser Gly Gly Gly Gly

1 5

<210> 2

<211> 225

<212> PRT

<213> Neisseria gonorrhoeae

<400> 2

Met Thr Phe Phe Lys Pro Ser Thr Val Val Leu Thr Ala Ser Ala Leu

1 5 10 15

Ala Leu Ser Gly Cys Val Ala Asp Pro Val Thr Gly Gln Gln Ser Pro

20 25 30

Asn Lys Ser Ala Met Tyr Gly Leu Gly Gly Ala Ala Val Cys Gly Ile

35 40 45

Val Gly Ala Leu Thr His Ser Gly Lys Gly Ala Arg Asn Ser Ala Leu

50 55 60

Ala Cys Gly Ala Ile Gly Ala Gly Val Gly Gly Tyr Met Asp Tyr Gln

65 70 75 80

Glu Gln Arg Leu Arg Gln Asn Leu Ala Gly Thr Gln Ile Glu Ile Gln

85 90 95

Arg Gln Gly Asn Gln Ile Arg Leu Val Met Pro Glu Ser Val Thr Phe

100 105 110

Ala Thr Gly Ser Ala Ala Leu Gly Gly Ser Ala Gln Tyr Ala Leu Asn
 115 120 125

Thr Ala Ala Gln Thr Leu Val Gln Tyr Pro Asp Thr Thr Leu Thr Ile
 130 135 140

Asn Gly His Thr Asp Asn Thr Gly Ser Asp Ala Val Asn Asn Pro Leu
 145 150 155 160

Ser Gln His Arg Ala Gln Ala Val Ala Tyr Tyr Leu Gln Thr Arg Gly
 165 170 175

Val Ala Ala Ser Arg Leu Thr Val Tyr Gly Tyr Gly Ser His Met Pro
 180 185 190

Val Ala Ser Asn Ala Thr Val Glu Gly Arg Ala Gln Asn Arg Arg Val
 195 200 205

Glu Ile Leu Ile Asn Pro Asp Gln Arg Ala Val Asn Ala Ala Arg His
 210 215 220

Met
 225

<210> 3
 <211> 185
 <212> PRT
 <213> Neisseria gonorrhoeae

<400> 3

Met Pro Ser Glu Ala Leu Gln Thr Ala Phe Arg Gly Asn Ile Arg Arg
 1 5 10 15

Ser Phe Thr Met Ile Arg Leu Thr Arg Ala Phe Ala Ala Ala Leu Ile
 20 25 30

Gly Leu Cys Cys Thr Thr Gly Ala His Ala Asp Thr Phe Gln Lys Ile
 35 40 45

Gly Phe Ile Asn Thr Glu Arg Ile Tyr Leu Glu Ser Lys Gln Ala Arg
 50 55 60

Asn Ile Gln Lys Thr Leu Asp Gly Glu Phe Ser Ala Arg Gln Asp Glu
 65 70 75 80

Leu Gln Lys Leu Gln Arg Glu Gly Leu Asp Leu Glu Arg Gln Leu Ala
 85 90 95

Gly Gly Lys Leu Lys Asp Ala Lys Lys Ala Gln Ala Glu Glu Lys Trp
 100 105 110

Arg Gly Leu Val Glu Ala Phe Arg Lys Lys Gln Ala Gln Phe Glu Glu
 115 120 125

Asp Tyr Asn Leu Arg Arg Asn Glu Glu Phe Ala Ser Leu Gln Gln Asn
 130 135 140

Ala Asn Arg Val Ile Val Lys Ile Ala Lys Gln Glu Gly Tyr Asp Val
 145 150 155 160

Ile Leu Gln Asp Val Ile Tyr Val Asn Thr Gln Tyr Asp Val Thr Asp
 165 170 175

Ser Val Ile Lys Glu Met Asn Ala Arg
 180 185

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 <213> Neisseria gonorrhoeae

<400> 4

Met Asn Thr Ile Phe Lys Ile Ser Ala Leu Thr Leu Ser Ala Ala Leu
 1 5 10 15

Ala Leu Ser Ala Cys Gly Lys Lys Glu Ala Ala Pro Ala Ser Ala Ser
 20 25 30

Glu Pro Ala Ala Ala Ser Ala Ala Gln Gly Asp Thr Ser Ser Ile Gly
 35 40 45

Ser Thr Met Gln Gln Ala Ser Tyr Ala Met Gly Val Asp Ile Gly Arg
 50 55 60

Ser Leu Lys Gln Met Lys Glu Gln Gly Ala Glu Ile Asp Leu Lys Val
 65 70 75 80

Phe Thr Asp Ala Met Gln Ala Val Tyr Asp Gly Lys Glu Ile Lys Met
 85 90 95

Thr Glu Glu Gln Ala Gln Glu Val Met Met Lys Phe Leu Gln Glu Gln
 100 105 110

Gln Ala Lys Ala Val Glu Lys His Lys Ala Asp Ala Lys Ala Asn Lys
 115 120 125

Glu Lys Gly Glu Ala Phe Leu Lys Glu Asn Ala Ala Lys Asp Gly Val
 130 135 140

Lys Thr Thr Ala Ser Gly Leu Gln Tyr Lys Ile Thr Lys Gln Gly Glu
 145 150 155 160

Gly Lys Gln Pro Thr Lys Asp Asp Ile Val Thr Val Glu Tyr Glu Gly
 165 170 175

Arg Leu Ile Asp Gly Thr Val Phe Asp Ser Ser Lys Ala Asn Gly Gly
 180 185 190

Pro Ala Thr Phe Pro Leu Ser Gln Val Ile Pro Gly Trp Thr Glu Gly
 195 200 205

Val Arg Leu Leu Lys Glu Gly Gly Glu Ala Thr Phe Tyr Ile Pro Ser
 210 215 220

Asn Leu Ala Tyr Arg Glu Gln Gly Ala Gly Glu Lys Ile Gly Pro Asn
 225 230 235 240

Ala Thr Leu Val Phe Asp Val Lys Leu Val Lys Ile Gly Ala Pro Glu
 245 250 255

Asn Ala Pro Ala Lys Gln Pro Asp Gln Val Asp Ile Lys Lys Val Asn
 260 265 270

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 <213> *Neisseria gonorrhoeae*

<400> 5
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Thr Asp Glu Thr Gly Asn Pro Lys Val Pro Ser Tyr Gly Phe Ser Glu
 20 25 30

Glu Lys Ile Gly Trp Ile Leu Val Leu Asp Lys Glu Gly Arg Leu Lys
 35 40 45

Thr Val Val Pro Asn Leu Thr Ala Asp Lys Lys Pro Gln Pro Lys Leu
 50 55 60

Met Ser Val Pro Arg Pro Glu Lys Arg Thr Ser Gly Ile Lys Pro Asn
 65 70 75 80

Phe Leu Trp Asp Lys Thr Ala Tyr Ala Leu Gly Val Glu Ala Asn Lys
 85 90 95

Asn Lys Ala Glu Ala Lys Glu Lys Pro Phe Thr Pro Ser Glu Lys Thr
 100 105 110

Phe Glu Ala Phe Lys Gln Tyr His Leu Asp Leu Leu Gln Asn Ser Glu
 115 120 125

Asp Glu Gly Leu Gln Ala Leu Cys Arg Phe Leu Gln Asn Trp Gln Pro
 130 135 140

Ala His Phe Ala Ala Glu Asn Leu Pro Ala Glu Met Leu Asp Ser Asn
 145 150 155 160

Thr Ala Phe Ser Leu Glu Lys Pro Thr Ala Leu Ile His Lys Arg Glu
 165 170 175

Ala Ala Gln Thr Leu Trp Ala Gly Cys Leu Lys Ser Asp Glu Ala Leu
 180 185 190

Glu Ser Leu Cys Leu Ile Ser Gly Asp Thr Ala Pro Ile Ala Arg Leu
 195 200 205

His Pro Ala Ile Lys Gly Val Phe Gly Gly Gln Ser Ser Gly Gly Ser

210	215	220																	
Ile	Ile	Ser	Phe	Asn	Lys	Glu	Ala	Phe	Ser	Ser	Phe	Gly	Lys	Glu	Gln				
225				230						235					240				
Gly	Ala	Asn	Ala	Pro	Val	Ser	Glu	Gln	Ser	Ala	Phe	Ala	Tyr	Thr	Thr				
				245						250					255				
Ala	Leu	Asn	Tyr	Leu	Leu	Arg	Arg	Glu	Asn	Asn	His	Cys	Leu	Thr	Ile				
				260				265							270				
Gly	Asp	Ala	Ser	Thr	Val	Phe	Trp	Ala	Glu	Ala	Asp	Asp	Ile	Val	Asp				
				275				280							285				

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 <211> 550
 <212> PRT
 <213> Neisseria gonorrhoeae

<400>	6														
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Leu	Ile	Val	Arg	Ser	His	Tyr	Arg	Trp	Thr	Tyr	Phe	Phe	Ala	Ser	Ala
			20					25						30	
Leu	Phe	Val	Phe	Leu	Ala	Gly	Gly	Met	Leu	Met	Leu	Thr	Ala	Gln	Trp
			35					40						45	
Gln	Arg	Ala	Leu	Asn	Phe	Ala	Ser	Val	Trp	Phe	Val	Val	Leu	Ile	Leu
			50				55						60		
Phe	His	Arg	Leu	Lys	Ile	His	Tyr	Tyr	Lys	Gln	Pro	Leu	Leu	Ile	Ser
65					70					75					80
Asp	Phe	Leu	Leu	Ile	Ala	Asp	Trp	Arg	Asn	Trp	Glu	Thr	Leu	Phe	His
				85					90					95	
Tyr	Lys	Glu	Ala	Val	Ile	Gly	Met	Ala	Gly	Leu	Leu	Ala	Leu	Ala	Gly
			100					105						110	
Tyr	Ala	Val	Phe	Gly	Trp	Ser	Gly	Ala	Asp	Ser	Leu	Gly	Met	Pro	Trp
			115					120						125	
Arg	Trp	Ala	Gly	Ala	Val	Leu	Phe	Ala	Ala	Ala	Phe	Val	Ser	Val	Arg
			130				135							140	
His	Phe	Ser	Lys	His	Pro	Gly	Ala	Val	Lys	Thr	Trp	Leu	Asp	Ser	Leu
145					150					155					160
Pro	Asp	Asp	Gly	Arg	Asp	Val	Phe	Leu	Asn	Leu	Pro	Met	Ser	Cys	Arg
				165					170						175
Ala	Val	Phe	Phe	Gln	Val	Pro	Val	Phe	Glu	Gly	Asp	Gly	Glu	Ala	Phe
				180					185						190

Ala Arg Gln Met Pro Ser Glu Thr Arg Pro Tyr Gly Met Ser Asp Glu		
195	200	205
Lys Pro Asp Ile Val Val Thr Leu Met Glu Ser Thr Leu Asp Pro His		
210	215	220
Cys Phe Asp Phe Ala Ala Ala Lys Ile Pro Asp Leu Lys Met Phe Gly		
225	230	235 240
Arg Gln Glu Asp Thr Val Phe Ser Ser Pro Leu Arg Val His Thr Phe		
	245	250 255
Gly Gly Ala Thr Trp Lys Ser Glu Phe Ala Phe Leu Ala Gly Val Pro		
	260	265 270
Ser Thr Asp Phe Gly Ala Leu Ala Ser Gly Val Phe Tyr Ser Val Val		
	275	280 285
Pro His Leu Gln Thr Gly Phe Val Arg Asn Leu Arg Glu His Gly Tyr		
	290	295 300
Phe Cys Val Ala Leu Ser Pro Phe Thr Lys Gly Asn Tyr Asn Ala Lys		
305	310	315 320
Ala Ala Tyr Asp His Phe Gly Phe Asn Leu Met Phe Gln Pro Gln Asp		
	325	330 335
Leu Gly Tyr Pro Ala Pro Met Gly Lys Asn Leu Trp His Ile Ser Ser		
	340	345 350
Glu Glu Met Met Gln Tyr Ala Arg Met Ile Leu Glu Lys Arg His Pro		
	355	360 365
Asp Leu Glu Asn Val Arg Gln Pro Met Phe Val Tyr Val Leu Thr Met		
	370	375 380
Lys Glu His Gly Pro Tyr Arg Thr Asp Thr Asp Asn Val Phe Asp Leu		
385	390	395 400
Asp Ala Pro Asp Leu Asn Ala Lys Thr Val Ser Ala Leu Asn Asp Tyr		
	405	410 415
Ile Gly Arg Ile Ala Asp Leu Asp Lys Ala Val Glu Ser Phe Asp Arg		
	420	425 430
Tyr Leu His Glu Arg Gly Lys Pro Phe Val Phe Gly Tyr Phe Gly Asp		
	435	440 445
His Gln Val Pro Phe Glu Gly Val Ser Val Arg Lys Lys Trp Asp Tyr		
	450	455 460
Ala Gln Pro Asp Tyr Val Thr Gln Phe Ala Val Arg Ser Asn Ile Ala		
465	470	475 480
Gly Gly Phe Val Gln Arg Gln Asp Phe Leu Asp Leu Ala Phe Ala Gly		
	485	490 495

Gly Val Leu Met Glu Ala Ala Gly Leu Glu Ala Lys Asp Gly Phe Met
500 505 510

Arg Ala Asn Met Ala Met Arg Gly Leu Cys Gly Gly Gly Leu Glu Asp
515 520 525

Cys Pro Asn Arg Glu Leu Val Gly Asn Tyr Arg Asn Tyr Leu Tyr Asp
530 535 540

Val Leu Lys Ile Ala Arg
545 550

<210> 7
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<213> Neisseria gonorrhoeae

<400> 7
Met Lys Thr Thr Asp Lys Arg Thr Thr Glu Thr His Arg Lys Ala Pro
1 5 10 15

Lys Thr Gly Arg Ile Arg Phe Ser Pro Ala Tyr Leu Ala Ile Cys Leu
20 25 30

Ser Phe Gly Ile Leu Pro Gln Ala Arg Ala Gly His Thr Tyr Phe Gly
35 40 45

Ile Asn Tyr Gln Tyr Tyr Arg Asp Phe Ala Glu Asn Lys Gly Lys Phe
50 55 60

Ala Val Gly Ala Lys Asp Ile Glu Val Tyr Asn Lys Lys Gly Glu Leu
65 70 75 80

Val Gly Lys Ser Met Thr Lys Ala Pro Met Ile Asp Phe Ser Val Val
85 90 95

Ser Arg Asn Gly Val Ala Ala Leu Ala Gly Asp Gln Tyr Ile Val Ser
100 105 110

Val Ala His Asn Gly Gly Tyr Asn Asn Val Asp Phe Gly Ala Glu Gly
115 120 125

Ser Asn Pro Asp Gln His Arg Phe Ser Tyr Gln Ile Val Lys Arg Asn
130 135 140

Asn Tyr Lys Ala Gly Thr Asn Gly His Pro Tyr Gly Gly Asp Tyr His
145 150 155 160

Met Pro Arg Leu His Lys Phe Val Thr Asp Ala Glu Pro Val Glu Met
165 170 175

Thr Ser Tyr Met Asp Gly Trp Lys Tyr Ala Asp Leu Asn Lys Tyr Pro
180 185 190

Asp Arg Val Arg Ile Gly Ala Gly Arg Gln Tyr Trp Arg Ser Asp Glu
195 200 205

Asp	Glu	Pro	Asn	Asn	Arg	Glu	Ser	Ser	Tyr	His	Ile	Ala	Ser	Ala	Tyr	210	215	220
Ser	Trp	Leu	Val	Gly	Gly	Asn	Thr	Phe	Ala	Gln	Asn	Gly	Ser	Gly	Gly	225	230	235
Gly	Thr	Val	Asn	Leu	Gly	Ser	Glu	Lys	Ile	Lys	His	Ser	Pro	Tyr	Gly	245	250	255
Phe	Leu	Pro	Thr	Gly	Gly	Ser	Phe	Gly	Asp	Ser	Gly	Ser	Pro	Met	Phe	260	265	270
Ile	Tyr	Asp	Ala	Gln	Lys	Gln	Lys	Trp	Leu	Ile	Asn	Gly	Val	Leu	Gln	275	280	285
Thr	Gly	Asn	Pro	Tyr	Ile	Gly	Lys	Ser	Asn	Gly	Phe	Gln	Leu	Val	Arg	290	295	300
Lys	Asp	Trp	Phe	Tyr	Asp	Glu	Ile	Phe	Ala	Gly	Asp	Thr	His	Ser	Val	305	310	315
Phe	Tyr	Glu	Pro	His	Gln	Asn	Gly	Lys	Tyr	Phe	Phe	Asn	Asp	Asn	Asn	325	330	335
Asn	Gly	Ala	Gly	Lys	Ile	Asp	Ala	Lys	His	Lys	His	Tyr	Ser	Leu	Pro	340	345	350
Tyr	Arg	Leu	Lys	Thr	Arg	Thr	Val	Gln	Leu	Phe	Asn	Val	Ser	Leu	Ser	355	360	365
Glu	Thr	Ala	Arg	Glu	Pro	Val	Tyr	His	Ala	Ala	Gly	Gly	Val	Asn	Ser	370	375	380
Tyr	Arg	Pro	Arg	Leu	Asn	Asn	Gly	Glu	Asn	Ile	Ser	Phe	Ile	Asp	Lys	385	390	395
Gly	Lys	Gly	Glu	Leu	Ile	Leu	Thr	Ser	Asn	Ile	Asn	Gln	Gly	Ala	Gly	405	410	415
Gly	Leu	Tyr	Phe	Glu	Gly	Asn	Phe	Thr	Val	Ser	Pro	Lys	Asn	Asn	Glu	420	425	430
Thr	Trp	Gln	Gly	Ala	Gly	Val	His	Ile	Ser	Asp	Gly	Ser	Thr	Val	Thr	435	440	445
Trp	Lys	Val	Asn	Gly	Val	Ala	Asn	Asp	Arg	Leu	Ser	Lys	Ile	Gly	Lys	450	455	460
Gly	Thr	Leu	Leu	Val	Gln	Ala	Lys	Gly	Glu	Asn	Gln	Gly	Ser	Val	Ser	465	470	475
Val	Gly	Asp	Gly	Lys	Va													